

What is claimed is:

1. A holographic recording system comprising:
an encoding device;
a storage medium;
a two-component lens unit placed between the encoding device and the storage medium, wherein the two-component lens unit directs a signal beam encoded by the encoding device onto a pupil plane positioned at the storage medium, and wherein the two-component lens unit has a pupil aberration that is less than 40% of the on axis pupil radius.
2. The holographic recording system of claim 1, wherein the encoding device is a spatial-light modulator.
3. The holographic recording system of claim 1, wherein the two component lens unit is telecentric.
4. The holographic recording system of claim 1, wherein the two-component lens unit comprises at least one material with a refractive index greater than 1.6.
5. The holographic recording system of claim 1, wherein the two-component lens unit has a pupil distance of 30% of EFL to 140% of EFL.

6. The holographic recording system of claim 1, wherein the two-component lens unit has an axial vertex length of between 45% and 195% of EFL.

7. The holographic recording system of claim 1, wherein the two component lens unit has a back focal length of between 30% and 140% of EFL.

8. The holographic recording system of claim 1, wherein the two-component lens unit has a Petzval curvature between -0.007mm^{-1} and 0.001mm^{-1} when the two-component lens unit is scaled to have an effective focal length of 100 mm.

9. The holographic recording system of claim 1, wherein the two-component lens unit has a field-of-view between 45 degrees and 75 degrees.

10. The holographic recording system of claim 1, wherein the two-component lens unit has an F-number between 4.0 to 16.0.

11. A holographic retrieval system comprising:

a storage medium;

a sensor;

a two-component lens unit placed between the sensor and the storage medium, wherein the two-component lens unit focuses a signal beam emanating from the storage medium onto the sensor, and wherein the two-component lens unit has a pupil aberration that is less than 40% of the on axis pupil radius.

12. The holographic retrieval system of claim 11, wherein the two component lens unit is telecentric.

13. The holographic retrieval system of claim 11, wherein the two-component lens unit comprises at least one material with a refractive index greater than 1.6.

14. The holographic retrieval system of claim 11, wherein the two-component lens unit has a pupil distance of 30% of EFL to 140% of EFL.

15. The holographic retrieval system of claim 11, wherein the two-component lens unit has an axial vertex length of between 45% and 195% of EFL.

16. The holographic retrieval system of claim 11, wherein the two component lens unit has a back focal length of between 30% and 140% of EFL.

17. The holographic retrieval system of claim 11, wherein the two-component lens unit has a Petzval curvature -0.007mm^{-1} and 0.001 mm^{-1} when the two-component lens unit is scaled to have an effective focal length of 100 mm.

18. The holographic retrieval system of claim 11, wherein the two-component lens unit has a field-of-view between 45 degrees and 75 degrees.

19. The holographic retrieval system of claim 11, wherein the two-component lens unit has an F-number between 4.0 to 16.0.

20. A two-component lens unit comprising:

a first lens component and a second lens component, wherein the two-component lens unit has a pupil distance that is at least 30% of EFL, a back focal length that is at least 30% of EFL, and a meniscus shaped lens element with an optical power of between -0.003 and 0.011 when scaled to an EFL of 100mm.

21. The two-component lens unit of claim 20, wherein the two component lens unit is telecentric.

22. The two-component lens unit of claim 20, wherein the two-component lens unit comprises at least one material with a refractive index greater than 1.6.

23. The two-component lens unit of claim 20, wherein the two-component lens unit has a pupil distance that is less than 140% of EFL.

24. The two-component lens unit of claim 20, wherein the two-component lens unit has an axial vertex length of between 45% and 195% of EFL.

25. The two-component lens unit of claim 20, wherein the two component lens unit has a back focal length of less than 140% of EFL.

26. The two-component lens unit of claim 20, wherein the two-component lens unit has a Petzval curvature -0.007mm^{-1} and 0.001mm^{-1} when the two-component lens unit is scaled to have an effective focal length of 100 mm.

27. The two-component lens unit of claim 20, wherein the two-component lens unit has a field-of-view between 45 degrees and 75 degrees.

28. The two-component lens unit of claim 20, wherein the two-component lens unit has an F-number between 4.0 to 16.0.